

WE CLAIM:

1 1. A method of preparing styrene or substituted
2 styrene comprising:

3 (a) converting a mixture comprising alkylbenzene
4 hydroperoxide or substituted alkylbenzene hydroperoxide
5 and an alkene to a mixture comprising phenyl alkanol or
6 substituted phenyl alkanol and an alkylene oxide in the
7 presence of a heterogeneous catalyst; and

8 (b) dehydrating the phenyl alkanol or substituted
9 phenyl alkanol or substituted phenyl alkanol in the
10 presence of a homogeneous dehydration catalyst to obtain
11 styrene or substituted styrene.

1 2. The method of claim 1, which is preceded by a
2 non-catalyzed step wherein alkylbenzene or substituted
3 alkylbenzene is oxidized to a mixture comprising
4 alkylbenzene hydroperoxide or substituted alkylbenzene
5 hydroperoxide.

1 3. The method of claim 1 in which the
2 alkylbenzene hydroperoxide comprises ethylene
3 hydroperoxide and the phenyl alkanol comprises 1-
4 phenylethanol.

1 4. The method of claim 3 in which the
2 heterogeneous catalyst is selected from the group
3 consisting of supported titanium compounds, zirconium
4 compounds, molybdenum compounds, vanadium compounds, and
5 the homogeneous catalyst is selected from the group
6 consisting of inorganic acids and organic compounds.

1 5. The method of claim 1 in which the
2 heterogeneous catalyst comprises titanium on silica, and
3 the homogeneous catalyst comprises an aromatic and/or
4 sulfonic acid.

1 6. The method of claim 5, in which the
2 homogeneous catalyst comprises p-toluene sulfonic acid.